A
STUDY ON FUNCTIONING OF PUBLIC HEALTH LABORATORIES IN KARNATAKA

1992 Jan. - Dec.

PART - 1

Dr. K. RAVINDRA KAMATH
M.B.B.S. DCP (Path & Micro)
Assistant Bacteriologist,
Public Health Institute,
BANGALORE — 560 001.

07962

Community Health Cell
Library and Information Centre
367, " Srinivasa Nilaya "
Jakkasandra 1st Main,
1st Block, Koramangala,
BANGALORE - 560 034.
Phone : 5531518 / 5525372
e-mail:sochara@vsnl.com

A STUDY ON FUNCTIONING OF PUBLIC HEALTH LABORATORIES IN K A R N A T A K A 1992 Jan - Dec

COMMUNITY HEALTH CELL
Library and Information Centre
No. 367, Srinivasa Nilaya, Jakkasandra,
I Main, I Block, Koramangala, Bangalore - 560 034.

THIS BOOK MUST BE RETURNED BY THE DATE LAST STAMPED		

COMMUNITY HEALTH CELL
LIBRARY
AND
DOCUMENTATION
UNIT
BANGALORE.

PH-120
07962

I N T R O D U C T I O N

Laboratories form the corner stones on which the Medical system stands. It need not be emphasised that any programme designed to improve the health conditions of the society will be a failure unless it is supported by an efficient laboratory network.

The services offered by laboratories under the Dept. of Health & FW Services in Karnataka are mostly limited to screening of blood smears for malarial parasites, screening of skin smears for My.leprae and examination of sputum smears for My.tuberculosis.

It is the intention of the author that these laboratories should be equipped to shoulder more responsibilities in the changed scenario casued by newer health hazards that face the society today.

Hence, an attempt is made to study the working pattern of laboratories under Health & FW Services Part I of this study confines ~~it~~ itself to the study of the Public Health Institute and District Health Laboratories. And a few suggestions are made to highlight the BASIC REQUIREMENTS of the Laboratories. The suggestions are not made in official capacity but only reflect the views of a person who work for 15 years in different laboratories. It shall give me immense pleasure of the positive suggestion are taken into account and a beginning is made towards building a better laboratory network.

I express my sincere thanks to Dr.S.B.Kurtakoti, Joint Director Public Health Institute for allowing me to use the official records. for the study. My thanks are also due to the staff members of Public Health Institute and District Health Laboratories for providing me the necessary material I thank Sri. Chandrashekar who has neatly typed the manuscrpit. Lastly my salutations are due to Dr.Ranganathachar MD (Micro) our beloved Director, who has put in long years of service in different laboratories and to whom all the laboratory personnel look upon for guidance and encouragement.

25.04.1993

DR.K.R.KAMATH

INDEX

1. Impact of Public Health Laboratories on Primary Health Care.
2. Laboratory facilities tobe set up at different levels for suvillance of communicable diseases.
3. A) Laboratory set up under Health services.
   B) Grouping of Investigations.
4. PUBLIC HEALTH INSTITUTE
   a) A brief note of the activities of Public Health Institute.
   b) Organisational Chart.
   c) Annual report for 1992.
   d) Observations and suggestions.
5. a) A study on functioning of District Health Laboratories.
   b) A Building Sketch for a model District Health Laboratory.
   c) Annual report for the year 1992.
      1) Staff position
      2) Instruments, reagents and glassware,
      3) Work turned out by District Health Laboratories.
      4) Observations & suggestions.
6. Annual requirement of Chemicals, reagents and glasswares for the District Health Laboratories.

-:-:-:-

IMPACT OF PUBLIC HEALTH LABORATORIES ON PRIMARY HEALTH CARE

The goal of health for all by year 2000 depends on Primary Health Care. The most important work under Primary Health Care is disease surviliance for which a good laboratory support is essential.

The early diagnosis of communicable diseases helps profoundly the patient as well as the community on a whole. By diagnosing the disease early control measures to prevent the spread of the disease can be taken up early. Hence, both mortality and morbidity can be reduced by introducing suitable control measures like vaccination and also by treating the patients with suitable antibiotics. The commonest diseases which are prevalent in Karnataka are diarrhoea (including Cholera) enteric fever, acute respiratory infections, meningitis hepatitis, measles, polio, mumps, Japanese encephalitis, chicken pox, tuberculosis, sexually transmitted disases Kyasanur Forest disease, filariasis and malaria.

The laboratory facilities at Primary Health Care level is not adequate to diagnose the above mentioned disease. It is limited to microscopy only. Now-a-days simple laboratory procedures are available for diagnosis of these diseases and these should be introduced at Primary Health Centre Laboratories. This will also improve quality of disease survelliance and control activity at Primary Health Care level leading to improve ment in overall health of the population in the region. Laboratory investigations from an important link in the delivery of effective health care at Primary Health Care level. The lack of laboratory based information at the Primary Health Level severly hampers effective disease survelliance and control.

..2.

The disease survilliance involves.

1. Health worker bringing the specimen to the laboratory from the suspected case.
2. Examination of the sample at PHC or transportation of the sample to District Health Laboratory.
3. Reporting the results to the officer concerned and clinical correlation of the laboratory diagnosis.
4- At Primary Health Centre level the Medical officer faces the following problems.
    1. Shortage of chemicals and instruments.
    2. Technicians is not trained to conduct the required tests.
    3. Lack of interest/shortage of personnel to shift the sample to District Health Laboratory.
    4. Post of the Technician is vacant.
    5. Imbalanced work load on technicians.

1. Shortage of chemicals and equipments: This is a perennial problem. Since the Medical officer is ignorant if the specification and requirement of chemicals and reagents he is unable to place the indent before the superior officer well in time.

The annual report pertaining to shortage of chemicals and equipments to peripheral laboratories is being taken up at the end of this report.

2. Technician is not trained to conduct the tests: There is no short-term "continuing education programme" or "Refresher courses" for the laboratory technicians. Publich Health Institute should take up short-term refresher courses for technicians.

3. Shortage of Technicians: Post of technicians are vacant in about 50% PHC laboratories.

Many laboratories are run by Health Workers who are trained in Malaria microscopy only and the Medical officer finds it difficult to rely on him for some other laboratory procedure. This situation can be managed if

(1) Rapid strip methods which afe simple are adopted wherever possible (Ex-Urine analysis)

(2) Laboratory attenders may be trained to help both in preparation of the stain and in staining procedures.

(3) Laboratory attender may be trained to help the technician in preparation of fixatives andtransportation of the specimen to District Health Laboratory.

At Taluk level Hospitals: Many types of laboratory investigations are not carried out as technician lacks the knowledge of recent, simple laboratory procedures. For example the old Folin wu method is still being used for estimation of blood sugar. Further the same technician has to makė himself available for all types of laboratory works. Naturally there is decreased efficiency and the technician takes a longer time for each procedure.

The main draw back of the laboratories at Primary Health Care Level (Taluk and PHC level) is that they are still in mideval periods of laboratory procedures adopting the old, cumbersome, time consuming and errorprone methods. This should be avoided in favour of the recent simple rapid procedures.

4. Lack of Transportation facilities at peripheral laboratory:

Certain samples like blood smear slides can be sent by post to District Health Laboratory after staining. Some samples ~~x~~ like stool sample for isolation of V.Cholera need to be sent in container containing special media.

Certain specimens cannot be sent in fixatives and have to be sent immediately in vaccine carrier-like boxes. (Ex: Water sample for bacteriological analysis)

It is desired that the Medical officer of Health may be given 3 days training in procedures in transporting the specimen. This very important aspect of laboratory procedures has been neglected for a long time leading to reporting of negative/false positive results.

contd...4.

(5) Imbalanced work load on the technicians: The technician at the Primary Health Centre spends most his time on (1) Malarial microscopy.

(2) Laboratory tests connected with ANC checkup.

It is more than often that there is a heavy backlog of malarial blood smear slides in most of the laboratories Further the basic investigations like urine for sugar and albumin are more often than not done due to lack of time. The other investigations concerned with the Primary Health Care don't figure in the list of investigations conducted at the PHC laboratory. Hence, the need of the hour is to develop a policy on "Development of Laboratory competence at peripheral level and introduce some of the laboratories procedures mentioned in next chapter.

LABORATORY FACILITIES TO SET UP AT DIFFERENT LEVELS FOR SURVIELLANCE OF COMMUNICABLE DISEASES

Disease	P.H.C. LAB	Taluka Lab	District lab	PUBLIC Health Institute
1. Diarrhoeal disease	Microscopic examination. Widal Transportation of specimen to Taluk Lab	Microscopic examination Widal Culture/Tansportation of specimen to Dist.H.L.	Microscopic examination Widal Preparation of Transport media Culture methods	Widal Elisa/Latex aglutination for Rota virus Culture facility for a. Camphylobacter b. EPEC, ETEC c. Cl.Difficile
2. Acute Respiratory infections.	Gramsta in Blood cell counts	Gram& stain Blood cell count ASO	Gram's Stain Blood cell count ASO	Culture of organism and sensitivity.
3. Hepatitis	Urine analysis	Bilirubin level HBs Ag	Bilirubin level HBs Ag Other liver function test.	HBs Ag Liver function test
4. S.T.D.	Transport of specimen Micro-vaginal smear for candida & Trichomonas	V.D.R.L. test Microscopy	V.D.R.L.test Microscopy H.I.V.test	V.D.RL.Test and other specific tests H.I.V. tests Microscopy.
5. Mycobacterial	ZN staining	ZN staining	ZN staining	ZN staining
6. Parasitic Infestations.	Blood smear exam for Malarial & filaria	"	Cross verification of blood smear	Culture & sensitivity as in & tests for drug resistance.

POINTS TO PONDER

Cost of therapy comes down with good diagnostic facilities, paying in the long run for the investment made in diagnostic infrastructure.

Lab Investigations:- Correct Diagnosis

1) Shortens patients stay in hospital.
2) Avoids unnecessary drug complications.
3) Saves on drugs.
4) Avoids spread of contagious diseases.
5) Nation gains by minimising manhours lost due to illhealth.

Proper Diagnostic facility includes:

1) Well trained Technicians.
2) Proper Instruments and Reagents.
3) Adoption of standardisation procedures.

The Laboratory set up under Health Services

Laboratories form the corner stones on which the medical system stands.

The advancement of the medical system is based on laboratory investigations. Gone are the days when a medical man used to rely on clinical symptoms only and treat the patient with a "shortgun preparation" of multiple drugs.

The multiplicity of the diseases make it more pertinent that laboratory investigations be undertaken methodically and systematically.

The type of laboratory investigations and hence the type of laboratory set up depends upon (1) the diseases that are common to a perticular area. (2) Clinical facilities available in the area and

(a) Peripheral laboratories attached to a Primary Health Centre: In a primary health centre importance is given for prevention of the common diseases like malaria, leprosy and TB. Common diseases of pregnancy like anemia common parasitic infestation. Here, it is sufficient to have a Junior laboratory technician with the knowledge of basic laboratory practises. Fundamentally this is considered as a Health Laboratory. Such a laboratory should have facilities for investigations cited in group (1) & group (2).

(b) Laboratory at Taluk Level hospital:

A referal hospital serving a population of 10 thousadd or more and has a bed strength of 50 or more requires a laboratory should have facilities for investigation cited in group (1) (2) (3)

District Health Laboratories & District Hospital Lab:

All District Head Quarters have district Health Laboratories. A Small clinical laboratory section also works in the District Hospital as a bed side laboratory.

At present most of the laboratories at the District Hospitals don't have sufficient space to run the laboratory properly. Unlike other section, the laboratory is not headed by the Doctor and there is no body to supervise the work and guide the technician properly. Hence most of thelaboratories in District Hospital run erratically and are highly undependable. Hence it is desired that the laboratory of the District Hospital be merged with District Health Laboratory which is under the direct supervision of Medical officer usually qualified Pathologist/Microbiologist.

The blood bank of the District Hospital should also be shifted to the premises of District Health Laboratory. The District Health Laboratory should be designated as District Laboratory or Distrct Health and Medical Laboratory. Itshould have facilities for investigations cited in group (1) and to Group (7).

Public Health Institute: It should have facilities for investigations cited in group (1) to Group (7) and also have certain special investigatory facilities.

Other Laboratories: These laboratories cater a particular national programme like TB, leprosy etc and are located at specific places only.

LABORATORIES FUNCTIONING UNDER DIRECTORATE OF HEALTH & FAMILY WELFARE SERVICES

1. Public Health Institute: Laboratory for Diagnostic Microbiology
   Laboratory for Bacteriological analysis of water
   Laboratory for clinical pathology
   Laboratory for Testing IV fluids.
   Laboratory for pesticide examination.
   Chemical examiners laboratory.
   D.P.A.cum RACE laboratory.
   Laboratory for Food & Water analysis.
2. District Level Labs : District Health Laboratory.
   Bedside clinical laboratory attached to district hospital.
3. Taluk level labs : Clinical pathology laboratory in the Taluk hospital.
4. Primary Health Centres: Health Laboratories with basic medical & health investigative facilities.
5. Health Laboratories : Entrusted with the particular Health Programme.

a) Leprosy: Laboratory attached to central leprosorium, Bangalore.
   Laboratory attached to District Leprosy officer.

b) Tuberculosis: 1. Laboratory attached to Lady Wellington Hospital Bangalore
   2. Laboratory attached to District T.B.Sanitorium.
   3. Laboratory attached to District T.B.officer.

c) Malaria:- 1. Central Malaria Laboratory, Bangalore.
   2. Laboraotory attached to D.D.Malaria in every division.

d) Laboratory attached filiria eradication programme.
e) Laboratory attached Guina work eradication programme.
f) V.D.R.L. Laboratory- At Bhatkal.
   S.T.D. Laboratory of District Hospitals.
g) Laboratories of vaccine Institute other than Public Health Institute at 1. Belagaum 2. At Shimoga (K.F.D.)

6. Other Laboratories:

a) Regional Asst.Chemical Examiners Laboratories at
   a) Raichur
   b) Chickamagalur
   c) Mangalore
   d) Chitradurga
   e) Dharwar

b) Laboratories attached to Divisonal Public Analyst cum RACE
   1. Bangalore
   2. Mysore
   3. Gulbarga
   4. Belagaum

c) Laboratories attached to Blood Banks.

d) Laboratories attached to communicable diseases investigation cum training centre, Mandya.

e) Leprosy training centre laboratories.
   1. Kollegal
   2. Chamarajanagar
   3.

f) Laboratories attached to HFPTC . Bangalore, Hubli.

GROUPING OF INVESTIGATIONS

Group I Examination of :

a) Blood smear for Malarial Parasites.
b) Blood smear for Microfilaria.
c) Skin smear for My.leprae.
d) Sputum for AFB
e) Prepration & and fixing of cervical smear.
f) Fixing of autopsy specimen for transportation purpose.

Group II

a) Haemaetological investigations (routine) HB%, TC, DC, ESR, Bleeding and clotting time.

b) Urine analysis.

c) Motion - Ova & cyst of parasites

d) Serology, VDRL and Widal

Group III Biochemical investigations-Blood sugar protiens Bilirubin level, lipids, SGOT, SGPT, Creatinine & urea.

Group IV Microbiological Investigations:

a) Bacteriological analysis of water.
b) Isolation of V.Cholera from stool samples.
c) Culture and sensitivity of other organisms.
d) Hanging drop and staining procedures.

Group V Food and Chemical analysis of water.

Group VI Histopathological examination of Tissues.

Group VII Blood bank.

1. Primary Health Centre should have xx facilities to conduct Group-I to Group II investigations.
2. A lab attached to Taluk level Hospitals should have facilites for Gr.I, Gr.II, Gr.III investigations.
3. District Level Laboratories should have facilities for Gr.I to Gr.VII investigations.

PUBLIC HEALTH INSTITUTE

A BRIEF NOTE ON THE ACTIVITIES OF PUBLIC HEALTH INSTITUTE BANGALORE.

Public Health Institute is the State Health Laboratory. It is one of the pioneer Institutions in the State serving the public for more than eight years. This Institute is headed by the Joint Director and has the following sections:

1. BACTERIOLOGY SECTION: Bacteriology section deals with
   a) Isolation of V.Cholera.
   b) Examination of water for potability purposes.
   c) Production of Typhoid & anticholera vaccine.
   d) Serology section for VDRL & widal tests.
   e) Diagnostic microbiology culture & sensitivity of blood sample are done.
   f) Microbiological analysis of food samples.
2. MEDICO LEGAL SECTION: It deals with
   a) Trap cases
   b) Spirituous Medicines for alcohol estimation
   c) Blood Urine examination
   d) Opium, Ganja, analysis.
3. FOOD & WATER LABORATORY: The section deals with the analysis of Food samples under PFA Act, poisonous cases, Chemical analysis of water and Industrial effluent analysis, Training of Food Inspectors.
4. SENIOR LABORATORY TECHNICIANS TRAINING SCHEME: Training of Senior Laboratory technicians.
5. REGIONAL ASSISTANT CHEMICAL EXAMINER'S LABORATORY: Food analysis under PFA Act of Bangalore Division & alcohol analysis under Excise Act.
6. PESTICIDE LABORATORY: Pesticide laboratory has been working since 1987 to take up the analysis of Pesticides samples purchases inthe Department of Health under NMEP and to check the quality of the Pesticides in the field.
7. I.V.FLUID TESTING LABORATORY: I.V.Fluids are tested to Pyrogen, bacterial contamination and furfural.

ORGANISATION

Statement showing the staff position of Public Health Institute, Bangalore (GAZETTED POSTS)

Sl. No.	Designation	No.of posts sanctioned	Working	Vacant
01.	Joint Director (Labs)	1	1	-
02.	Deputy Director	1	1	-
03.	Chemical Examiner	1	-	1
04.	Chief Chemist & Public Analyst	1	1	-
05	Senior Chemist	4	2	2
06	Divisional Public Analyst-cum-Regional Assistant Chemical Examiner.	1	-	1
07.	Asst.Bacteriologist	1	1	-
08	Junior Bacteriologist	1	1	-
09	Officer Incharge of Senior Laboratory Technician Training	1	1	-
10	Assistant Chemical Examiner	1	1	-
11	Chemists	3	2	1
12	Food Analyst	2	2	-
	Total	18	13	5

Statement showing the Staff Position of Public Health Institute, Bangalore.

NONIGAZETTED OFFICIALS

Sl No	Designation	No.of posts sanctioned	working	vacant	Remarks
01.	Office Superintendents	2	-	2	
02	Junior Chemist	15	8	7	
03	Health Supervisor	1	-	1	
04	Sr.Health Inspectors	3	3	-	
05	Food Inspector	4	4	-	
06.	Sr.Laboratory Tech.,	9	8	1	
07	F.A.A.	6	6	-	
08	Stenographer	1	1	-	
09	Junior Lab.Technician	18	17	1	
10	S.D.A.	4	4	-	
11	Typist cum Assistant	2	2	-	
12	Typist	4	4	-	
13	Carpenter	1	1	-	
Driver		2	2	-	
15	Daffedar	1	1	-	
16	Laboratory attenders	26	24	2	
17	Grou 'D'	13	7	6	
18	Sanitary workers	1	1	-	
19	Night Watchman	1	1	-	
		114	94	20	

Statement showing the Progress Reports of various sections achievement at Public Health Institute, Bangalore January to December 1992.

-oOo-

I. BACTERIOLOGICAL SECTION:

1. Bacteriological analysis of water samples	..	1,689
2. Total positive	..	991
Total negative	..	698
Seriological work & other investigations:		
1. No of Urine analysis	..	11
2, No of Blood Test	..	5
3. Widal	-.	-
4. V.D.R.L.	..	51
Diagnostic Bacteriological analysis:		
a) Stool sample analysis		
1) No of samples received and analysed V.Cholera	..	1,482
2) Positive	..	199
3) Negative	..	1,182
b) 1) Food samples analysed	..	41
2) Positive	..	36
3) Negative	..	99
c) Other bacteriological tests		
1) B.T.Swab	..	4
2) Urine culture	..	5
3) Blood culture	..	63
4) Water sample	..	33
d) International Certificates issued	..	24
e) Production of vaccine		
1) A.C.Vaccine	..	5,00,000 ml
2) T.A.Vaccine	..	27,000 ml

II I.V.FLUID TESTING SECTION

1. No.of samples analysed	..	939
2. No.of samples pending analysis	..	142

III. CHEMICAL EXAMINERS SECTION:

1. SMP Samples	...	287
2. Samples sent by Lokayukta	...	11
3. Blood and urine analysed	...	77
4. Liquors samples	...	24

IV WATER ANALYSIS SECTION:(CHEMICAL ANALYSIS)

1. No.of water samples analysed	...	1249
xx. No of food samples		
2. Refferred samples under water act 1974 & Air 1991	...	20

V DIVISIONAL FOOD LABORATORY:

No of samples analysed	...	132
No.of food samples pending analysis	..	6

VI FOOD ANALYSIS LABORATORY:

1. No of food samples analysed under PFA Act	...	1138
2. Other food samples analysed	...	339
3. No of food samples analysed under PFA Act found adulterated	..	959

VII PESTICIDE LABORATORY

1. No of samples analysed	..	112
2. No of samples confirming to standard	..	110
3. Not confirming to standard	..	125

OBSERVATION & COMMENTS ON THE FUNCTIONING OF PUBLIC HEALTH INSTITUTE

1. DIAGNOSTIC MICROBIOLOGY LABORATORY:

The work in this Lab is mostly confined to isolation of V.Cholera from stool samples of suspected cases. Blood and stool culture for isolation of S.typhi and para typhi are also done. The laboratory also undertakes micro-biological assay of food samples. Last year the diagnostic microbiology section investigated into the epidemic of Gastro-entrities in Bellary and Raichur districts.

The main function of this lab is to investigate into the epidemics. Hence the following suggestions are made:

a) The medical officer-in charge of the section should have experience/qualification in conducting micro-biological procedures.

b) There is shortage of various chemicals and reagents to prepare the media etc. This can be avoided by calling for short term tenders.

c) It is suggested that the section should always keep ready 'A field visit kit' so that they will be able to visit the field at short notice.

d) It is necessary that a diagnostic microbiology lab should be equipped with the ELISA and antigens for detection of common communicable diseases.

e) The section should be headed by a Microbiologist who is well aware of the laboratory procedures.

f) The personnel of the section should be sent to refresher courses/training in recent diagnostic methods.

It is disturbing to note that the department is making request to various agencies for help in diagnosing the epidemic, when it has a state laboratory of its own and has good trained microbiologists. It is sad to note that qualified laboratory personnel from PHI are not deputed to training programmes connected with the detection of AIDS vaccines production and storage and other programmes which require active involvement of PHI.

2. Water Bacteriology Section: Bacteriological analysis of water should be done within 8 hours of its collection. Due to the constant shortage of materials needed for the test the examination is done very late, and hence the redults obtained in many cases are false negative.

Further, the method adopted to test the water is not very accurate and is time consuming,. It is suggested that the more accurate membrane filter technique may be adopted.

3. Vaccine Manufacturing Section: This section worked only for about 3 to 4 ~~raw-materials~~ months in the year due to the shortage of raw-ma erials. Financial powers of the head of the Institute is limited and hence materials in sufficient quantity could not be purchased on contingencies basis. The tenders during the last 3 years were rejected. Further it is saidthat many of the firms are reluctant to supply the raw materials to PHI. As the earlier bills were not paid promptly. It is felt that the raw materials may be purchased after floating tenders by the supply section/GMS/ PHI. A committee may be formed to go into the details of an interuptted supply of raw materials.

The drug controller has informed that the licence of the vaccine manufacturing section will be suspended unless his earlier observations are attended to. A cost of various modifications to vaccine section suggested by the Drug Controller costs about Rs.20 lakhs approximately- Hence a committee may be formed urgently to go into the observations of the drug controller. The committee may also discuss the case for continuing vaccine production in the light of attempts undertaken to produce oral AC vaccine by the Central Government.

4. Food and Water Analysis: The water analysis laboratory (Chemical) is doing a very good job. Request for certain equipments are put-forth by thesection and the same may be provided early.

A report on food analysis lab, psesticide lab has been noted elsewhere.

5. Food Inspectors Training Section: About 20 Sr.Health Assistants are undergoing Food Inspectors training courses for 3 months at this Institute. The trainees oath under Food Inspector Training scheme and Sr.Lab Technician training scheme lack of hostel facilities. A make-do dormitory facility may be arranged in the annex-building housing the cleaning section.

6, Senior Lab Technician Training Scheme: The present batch consits of 14 members only. Though intake of 20 members is allowed. There is reluctance among the technicians to join the course, because many of the selected trainees are on the verge of retirement. This system of deputation may be aboloshed in favour of deputing Sr.most technicians within the age of 45 years (as being practised while deputing in-service doctors for PG Courses) A small number of private candidates may also be permitted t to join the course. In the absence of refresher course the reliability and efficiency of the laboratory work is going down steadily. Further, the staff allowed under the above programme consist of one training officer only. A post of peon/lab attender may be created to help the training officer. The renumeration paid to the part-time lecturer is limited to Rs.20/. PM. This incentive may please be raised to 100/- PM as being given to part-time lecturer of other training programmes. Lastlyfor obvious reasons the post of training officer must be occupied by a Pathologist/Micro-biologist only.

7. I.V.Fluid Testing Section: The animal house is in a pathetic condition. So I.V.fluids are being tested at Drug controllers laboratory at present. Every month examnation of 80-90 samples of IV fluids is kept pending and this causes great hardship to the general public. It is desired that the necessary instruments (approximate cost of Rs.5 lakhs) be purchased early. The renovation of animal house has to be taken up urgently.

8. Chemical Examiners Laboratory: Initially this lab was responsible for chemical analysis of visera of post-mortem cases sent by doctors from all over the State. The Medical officers conducting the post-mortem often find difficult to come to a conclusion and look for guidance from this lab. It is desired that a Forensic Medicine expert may be posted to this laboratory.

PUBLIC HEALTH INSTITUTE

FUTURE GOALS AND REQUIREMENTS:

A) Special Investigative facilities: The Primary task of Public Health Institute as the name implies is to identify investigate and then find preventive measures to the Health Problem of the Society.

In view of increasing number of newer Health hazards it is desirable to establish special investigative facilities that need to be established are enlisted here.

1. Facilities to screen suspected AIDS cases & confirm the diagnosis of positive cases.(By Elisa test & Western block techniques).
2. Facility to identify the causative organisms of communicable diseases prevalent in Karnataka. A list of the investigatory facilities to be included under this head is shown elsewhere.
3. Adoption of recent faster diagnostic methods in Bio-chemical examinations-Auto/Semi Auto analysis may be made available.
4. Blood banks, unless supervise properly are a source for rapid transmission of many diseases. It is desirable & is also in accordance with the WHO recommendations that Public Health Institute should house a properly run Blood bank patterning to the needs of Major district hospitals of the state. The blood bank should confine it s activity to storage of collected blood from various centres and should redistribute it to the needy centres. We should have Ultra-centrifuge facility to produce packed cells & other blood components.

B) TRAINING FACILITIES: As a State Level Laboratory Public Health Institute is headed by a Senior officer of the cadre of Joint Director, whose duty involves supervision of laboratories. Hence, It is but natural to expect that he should be able to guide the laboratory staff and give proper directions and for this purpose Public Health Institute, which is also a training Institute must take up the responsibility of training the laboratory personnel to a high degree of efficiency. A B.Sc course in Lab. technology may be started in this Institute at its earliest. A proposal to set up the said course was mooted by this Institute in the year 1987-88, and the Bangalore University formed an expert committee to look into the proposal has cleared the project. The Govt.of Karnataka which wanted certain clarifications was appraised of the details of the project. A small annexure building is needed to house the classes though the first batches can be accomodated in the existing class-rooms. A post of the Principal & 2 lecturers will have to be created when the Govt. sanction the scheme.

C) Setting up of occupational Health Laboratory:

In view of the incresing number of population exposed to Industrial haszards it is highly desi able to start an occupational Health Laboratory to investigate into the Health problems affecting the population working in various industries, like chemical industries.etc. The estimation of blood levels of various toxic substances like organo-phosphorous compounds etc., is mandatory as per Govt. notification. At present there is hardly any laboratory engaged in this type of work in our state. It is also the task of Public Health Insitute to check level of exposure to substances like asbestos, molasses, fungi, coal tar products among the population exposed to these substances. These are the present days scourges comparable to old-day epidemic like cholera, plague and typhoid.

COMMUNITY HEALTH CELL LIBRARY AND DOCUMENTATION UNIT BANGALORE
PH-120 N92

D) The major hospitals in the state suffer from acute shortage of ~~xxx~~ blood and blood products, espedally during calamities. This Institute is already running cold-storage units and blood collected by various agencies can be stored here re-distribution among hospitals whenever need arises.

E) This Institute undertakes micro-biological analysis of food samples routinely. It receives a wide range of food samples like bread, mushroom, pickles and bewerages It is highly desirable that the bacterilogists of this Institute be sent for training in food micro-biology, for a month once in three years so that proper and recent techniques in micro-biological analysis of food may be adopted.

F) During the time of epidemic in the state the district health authority is under the mercy of local~~x~~ private medical colleges for laboratory investigations. This Institute prepares and keeps in stock to vide variety of media for bacteriological examination and it can also undertakes various haemotological, serological and chemical investigations. Hence, this Institute can investigate into epidemic cases at short notice. This picture will be complete if this institute has the services of an entamologist. Hence, it will be more economical and feasible to merge epidemiological training institute of Mandya with this Institute.

G) Provision for a Cold room: A budget of 7 laksh be provided for repair renovation of the existing, non functioning cold room-

H) This Institute houses the state laboratores and it is natural to expect that it ~~xxxxx~~ should be equipped with the latest and modern investigative instruments. A sepe~~x~~ate list of these instrument is given elsewhere.

I) It is desirable that this Institute be entrusted with standardisation of laboratory agents with and laboratory work of dis trict and Hospital Laboratores.

J) A post of engineer well versed in repairing various laboratory gadgets should be created at Public Health Institute. He should be responsible for checking, evaluating new laboratory machines and repair of old ones.

He will also hold classes for students of proposed B.Sc course in Med-Lab Technology.

K) This Institute should be entrusted with repairing a consolidated list of various instruments lying idle in various laboratories. This should be repaired and redistributed before further instruments or glassware of similar type are purchased.

A STUDY ON THE FUNCTIONING OF DISTRICT HEALTH LABORATORIES OF KARNATAKA.

For any laboratory to function satisfactorily it requires:-

01. Trained men
02. Availability of proper materials.
03. Money to purchase the materials.

It is sad to note that the District Health Laboratories lack all the above three.

Trained Personnel: of the officers in-charge of the labotories only are qualified Pathologists/Microbiologists. The Department has Pathologists and Microbiologists in its service. Action should be taken to post these qualified Doctors to District Health Laboratories.

Technician: The number of posts of technicians sanctioned to each lab is . This should be raised to 7 for each lab in future, to manage the various sections of the District Health Laboratories. A number of Technician are posted to Institutions where no laboratory exist. In certain Institutions the number of technicians ~~xxxxxx xx xxxxxx xx xxxxxxxx Health~~ is more than required number. These technicians should be shifted to District Health Laboratory.

Majority of the technicians never had attended a ~~xxxxxx~~ refresher course after their training which was decades ago. Hence, it is not surprising that the results of such simple investigations like blood examination cannot be fully relied upon. It is desired that they technicians may be sent for 1 month long special refresher course in training institutes.

WORK TURNED OUT AT DIST.HEALTH LABORATORIES.

At present 90% of the investigation conducted at DHL consist of :

a) HB%, TC. DC
b) Urine examination for albumin & sugar.
c) Motion examination.
d) Examination of blood smears for malarial parasites.

No bio-chemical tests other than blood sugar estimation are done in these DHLS. It is necessary that 6 to 7 important and easy to do bio-chemical tests be done at the laboratories.

To cope up with the work of laboratory it is better to entrust a group of investigations to a particular technician. This minimises errors in the laboratory work and increases efficiency.

All the investigations that have to be done in the DHL can be grouped into 7 groups. A list of investigations coming under different groups is mentioned elsewhere in this book and every technician is entrusted with a particular group of investigations. Serological work may be taken up by the Medical officerhimself.

The work load in the laboratory may be minimised and hence efficiency can be increased by adopting certain rapid strip methods. The following rapid methods as suggested by WHO may be adopted in the DHL in this year itself.

1. Rapid strip method for Urine analysis.
2. Widal test using stained salmonella antigen.
3. Blood sugar estimation by strip method.

These three tests are suggested here because they form bulk of investigations in every DHL.

It is recommended that 4 laboratories at Bangalore, Chitradurga, Shimoga and Dharwar may be equpped with the complete rapid diagnostic kits for various routine bio-chemical examinations from the next financial year.

Histopathology: At present none of the DHL have facility for Histopathological examinations. It is highly desirable that the DHL be entrusted with the work of preparation of formalin/ether alcohol fixatives and transportation of the specimen to major institutions on behalf of the Dist-Hospital.

In view of the Cervical Cancer being the major killer among the women and also because Cervical Cancer can be cured if detected in early stages it is desired that DHL (District Health Laboratory) take up a programme for collections of Cervical smears from suspected cases and examine them at District Health Laboratory. A crash training programme for the Medical Officer may be arranged in co-operation with Kidwai Institute of Oncology OR the District Health Laboratory can arrange the smears fixed in other alcohol mixture to the said Institute for examination.

Microbiology : The District Health Laboratory were set up for Laboratory Surviellance work against communicable diseases like Cholera and many other water-borne diseases. Hence it is very much necessary that the lab should have microbiology section functioning immediately. Necessary guidance and initial supply of raw materials may be had from Public Health Institute, Bangalore.

It is utmost important that they should also take up bacteriological analysis of water immediately.

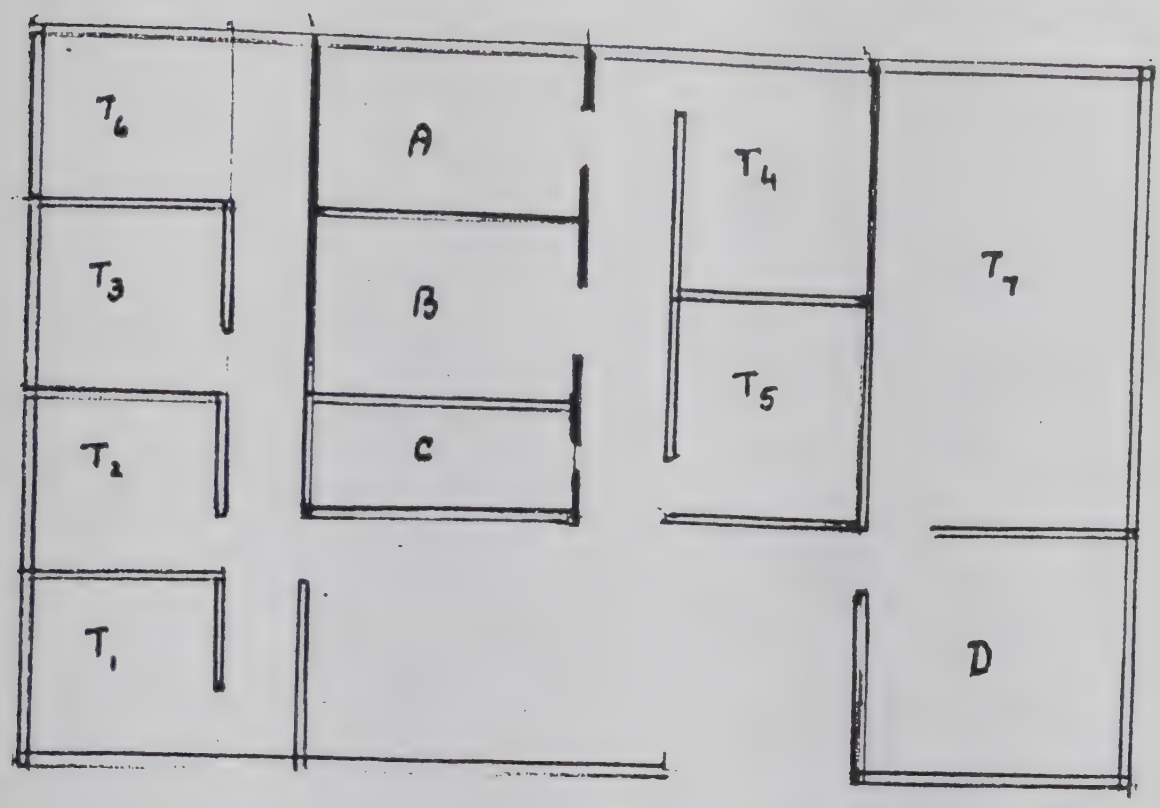
Divisional Food Laboratories & RACE Laboratory :

The post of Public Analyst and RACE is vacant in two of the four Divisional Food Laboratories. The post of RACE is vacant in 3 of the 5 RACE Lab's. It is suggested that early action be taken to fill up the posts by transfer.

It is desired that the chemical analysis of water be taken up by these laboratories at its earliest.

Blood Banks : District Health Laboratory has a blood bank section. The Technician from District Health Laboratory are deputed to work in the blood bank of District Hospitals. The blood bank at District Hospitals have many draw-backs and dont work as per the specifications of the Drug-Control Act. Further the Technician working in the Blood Bank has nobody to look for guidance. Hence the Blood Banks should be shifted to District Health Laboratory and work under direct supervision of Medical Officer. The norms required for the blood bank will have to be strictly adhered to.

PLAN FOR A MODEL DISTRICT HEALTH/MEDICAL LABORATORY



A : Autoclave room

B : Cleaning

C : Stores

D : office of the Senior Specialist (Pathologist/ Microbiologist)

The rooms denoted from T_1 to T_7 represent space alloted for Group-I to Group 7 investigations respectively.

- o 0 o -

DISTRICT HEALTH LABORATORY

STAFF POSITION

OFFICERS INCHARGE OF LABORATORY

District	Name of the Medical officer	Speciality
Chitradurga	Dr.S.G.Sadasivanagowda M.B.B.S. D.C.H.	Paediatrician
Kolar	Dr.P.S.Krishnamurthy, M.B.B.S. M.D.	Pathologist
Shimoga	Dr.Vidya V.Chiniwaler M.B.B.S. D.C.P.	Pathologist
Tumkur	Dr.S.A.Shroff M.B.B.S. D.C.P.	Pathologist
Belagaum	Dr.T.L.Srinivas M.B.B.S.	-
Bijapur	Dr.Dhanashri.C.S. M.B.B.S.	-
Dharwar	Dr.G.H.Antharagangi M.B.B.S. D.V.D.	Skin
U.Kannada	Dr.Zarina Khadri M.B.B.S. DA	Anasthetist
Bellary	Dr.H.Eshwara Gowda M.B.B.S. D.Ortho	Orthopedician
Bidar	Dr.Rajashekar Kulkarni M.B.B.S. D.V.D.	Skin -
Gulbarga	Dr.Chandrashekar M.B.B.S.	-
Raichur	Dr.I.S.Patil M.B.B.S.	-
Chickamagalur	Dr.Bhaghyalakshmi M.B.B.S. M.D.	Microbiologist
Hassan	Dr.M.P.Umamaheswar M.B.B.S. D.C.P.	Pathologist
Mandya	Dr.H.C.Narayana M.B.B.S.	-
Mercera	Dr.Nagaraju M.B.B.S	-
Mysore	Dr.~~S~~ Sujothi M.B.B.S.	-
S.Kanara	Dr.Terry Nancy Lobo M.B.B.S.	-

Sl. No.	District	Auto Clave	Hot Air Oven.	Water bath	Incu= bator	Micro scope	Thermo meter	Colori- meter	Micro slides	Cover slips	Enamel bowels	Pipets	Test tubes	Racks	Durham tubes	Centri fuge	Haemo- glyo- bino- meter	Haemo- glyo- bino- meter	Petri diah	Loop	Chlo rea- core.	ESR tub
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1.	Chitradurga	2	3	2 (2)	2(1)	7	16	(2)	4	5Pkts	1	154	1630	6	700	1(2)	1	2	-	-	-	50
2.	Kolar	(1)	(1)	(2)	1	6(2)	2	-	A	A	A	A	A	A	A	(2)	4	2	-	-	-	A
3.	Shimoga	Yes 1	Yes 1	Yes 1	Yes 1	Yes 10	Yes 2	Yes 1	Yes 500	Yes 5 Boxes	Yes 3	Yes 5	Yes 200	Yes 4	Yes 200	Yes 1	Yes 3	Yes 3	50	2 2	1 1	Yes
4.	Tumkur	1	1	1	1	3	2	2	-	690Pkts	-	-	3900	1072	-	1	2	2	-	-	-	25
5.	Belgaum	2	1(1)	1	1	4	2	Nil	2000 Nos.	6 Pkts.	2	1 Doz.	4 Doz.	4	50 Nos	3	3	2	50	1	Nil	6
6.	Bijapur	1	1	(1)	A	A	1	A	A	Nil	A	A	A	A	A	A	A	A	-	-	-	A
7.	Darwar	(1)	Yes	(1)	(1)	Yes	No	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No	No	Yes
8.	U.Kannada	Yes	Yes	Yes	Yes	Yes	1(3)	No	Yes	No	Yes	Yes	No	Yes	No	1	2	1	-	-	-	6
9.	Bellary	1	2	2	2	2	-	3(1)	6 Pkts	9	3	21	300	5	Nil	1(1)	8	4	20	3	-	15
10.	Bidar	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
11.	Gulbarga	1(1)	(1)	1	N.A.	3(2)	4	1	A	A	-	A	A	A	A	A	A	-	-	-	-	A
12.	Raichur	1	(2)	1	1	(3)	-	1	20 Box	-	-	10	-	6	-	2	2	3	-	-	-	6
13.	Chickmagalur	1	1	3	1	6	1	2	1352	Yes	Yes	Yes	Yes	Yes	-	-	1	1	Yes	1	Nil	1
14.	Hassan	1	1	2	1	7(10)	Yes	1	Yes	Yes-A	No	Yes-A	Yes-A	Yes-A	Yes-A	2+(1)	2+(2)	3+(1)	-	-	-	Yes
15.	Mandya	1	1	2	1	7(2)	2	2(2)	23 Pkts	127Pkt.	-	152	900	4	-	1(1)	3	2	-	-	-	1
16.	Mercara	1(1)	2	3	1(1)	7(2)	1 Nil	1 Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	-	-	-	Yes
17.	Mysore	1	(1)	(1)	(1)	1 Yes 4																
		1	1	1+(1)	1	5(4)	1	1	1500	100 Pkts	12	6	100	5(1)	50	3	1	5	-	-	-	9
18.	S.Kanara	1	1	2	1	3	-	2	-	-	4	-	2 Doz.	4 Doz.	-	1	3	3	-	-	-	9

A - AVAILABLE , N.A. - NOT AVAILABLE , Doz. - Dozen , Pkts - Packets.

PH-120

COMMUNITY HEALTH CELL LIBRARY AND DOCUMENTATION UNIT

GROUP - I INVESTIGATION

01			Blood smear for Malarial parasite.	Blood smear for Microfiliria	Smear for My.Leprae	Sputum for AFB	Preparation & fixing of cervical smear	Fixing & Transfer of Autopsy specimen.
01	Chitradurga	90	15893	-	34	-	-	-
02	Kolar	90	56103 (53/days)	-	-	-	-	-
03	Tumkur	92	-	-	-	-	-	-
04	Belaguam		457	-	-	-	-	-
05	Bijapur	90	-	-	-	280	-	-
06	Dharwar		-	-	-	-	-	-
07	U.Kannada		-	-	-	-	-	-
08	Bellary	92	-	-	-	-	-	-
09	Bidar		-	-	-	-	-	-
10	Gulbarga		3151	-	-	-	-	-
11	Raichur	(90)	-	-	131	-	-	-
12	Chikamagalur	90	38236	-	642	-	-	-
13	Hassan	(92)	71837	-	-	-	-	-
14	Mandya	(90)	48037	-	231	-	-	-
15	Mercara	(92)	3009	-	4	-	-	-
16	Mysore	(90)	65522	-	-	-	-	-
17	S.Kanara		-	-	-	-	-	-
18	Shimoga	(90)	51240	-	296	-	-	-

GROUP III INVESTIGATION

			Blood Sugar	Bilirubin	Lipids	Cholesterol	SGPT	SGPT	Creatinine	Urea
01	Chitradurga	90	477 ~~1893~~	10	1	-	-	-	-	31
02	Kolar	90	7001	310	-	-	310	310	-	2590
03	Tumkur	92	1674	-	-	141	-	-	-	188
04	Belaguam		-	-	-	-	-	-	-	-
05	Bijpur	90	106	15	-	-	12	12	-	102
06	Dharwar		-	-	-	-	-	-	-	-
07	U.Kannada		-	-	-	-	-	-	-	-
08	Bellary	92	1188	72	59	104	-	-	-	630
09	Bidar		1044	-	-	-	-	-	-	338
10	Gulbarga		-	-	-	-	-	-	-	-
11	Raichur	(90)	48	-	-	-	-	-	-	-
12	Chikamagalur	90	-	-	-	-	-	-	-	-
13	Hassan	(90)	-	-	-	-	-	-	-	-
14	Mandya	(90)	597	-	-	44	-	-	-	55
15	Mercera	(92)	3538	-	-	276	-	-	-	1182
16	Mysore	(90)	44	-	-	-	-	-	-	-
17	S Kanara		144	-	-	19	-	-	-	27
18	Shimoga	(90)	1497	10	-	-	-	-	-	490

			Bacteriological Analysis of water	Isolation of V.Cholera from stool samples	Culture and Sensitivity
01	Chitradurga	90	-	-	-
02	Kolar	90	-	-	-
03	Tumkur	92	-	-	-
04	Belagum		1321	-	-
05	Bijapur	90	60	-	-
06	Dharwar		-	-	-
07	U.Kannada		-	-	-
08	Bellary	92	-	558	-
09	Bidar		-	151	-
10	Gulbarga		-	-	-
11	Raichur	(90)	-	-	-
12	Chikamagalur	90	14	21	-
13	Hassan	(92)	-	-	36
14	Mandya	(90)	-	-	-
15	Mercara	(92)	-	-	-
16	Mysore	(90)	84	1778	-
17	S.Kanara		-	-	-
18	Shimoga	(90)	-	40	-

GROUP - VI INVESTIGATIONS

HISTOPATHOLOGICAL EXAMINATION

Sl. No.	District	Samples received	Processed	Examined
01	Chitradurga	Nil	Nil	Nil
02	Kolar	"	"	"
03	Shimoga	"	"	"
04	Tumkur	"	"	"
05	Belagaum	"	"	"
06	Bijapur	"	"	"
07	Karwar	"	"	"
08	U.Kannada	"	"	"
09	Bellary	"	"	"
10	Bidar	"	"	"
11	Gulbarga	"	"	"
12	Raichur	*	"	"
13	Chikamagalur	"	"	"
14	Hasaan	"	"	"
15	Mandya	"	"	"
16	Mercera	"	"	"
17	Mysore	"	"	"
18	S.Kanara	"	"	"

Sl. No.	District	Patients tested for Aids	Patients tested for Inf.Hepatitis	No.of bottles collected
01	Chitradurga	Nil	Nil	Nil
02	Kolar	"	"	"
03	Shimoga	"	"	"
04	Tumkur	"	"	"
05	Belagaum	"	"	"
06	Bijapur	"	"	"
07	Karwar	"	"	"
08	U.Kannada	"	"	"
09	Bellary	"	"	"
10	Bidar	"	"	"
11	Gulbarga	"	"	"
12	Raichur	"	"	"
13	Chickamagalur	"	"	"
14	Hassan	"	"	"
15	Mandya	"	"	"
16	Mercera	"	"	"
17	Mysore	"	"	"
18.	S.Kanara	"	"	"

None of the District Health Laboratories have a set up for Blood Bank. The Blood banks function in District Hospital and Technicians for the Blood Bank are deputed from Dist. Health Laboratories.

OBSERVATIONS AND RECOMMENDATIONS

(For the year 1992)

Of the 18 District Health Laboratories 7 require repair/ replacement of Autoclave/Hot-Air oven/Incubators immediately as they dont have spare instruments with them. In majority of the cases repacement of heating element and/or thermostat gastket is required. These Instruments may be shifted to Bangalore for repairs through the Health Equipment officer. The Budget required is approximately Rs.15,000/-

About 10 water baths need to repaired. Approximate cost is Rs.5,000/-. These may be got repaired by the Health Equipment officer.

About 25 microscopes need repairs. These can be brought to Central Malaria Laboratory for repairs. Budget required is approximately Rs.5,000/-

About 10 colorimeters need repairs. Repairs can be entrusted to authorised repairers at Bangalor after estimation of repair cost. If cost of repair is high it is feasible to supply new colorimeters to the laboratory in phased manner. Every year purchase of 5 new colorimeters can be made. Approximate cost is Rs.60,000/-

Each laboratory may be supplied with the 5 gross of microslides and 100 gms of cover slips every year.

Pippettes of good quality and of minor denonimations like 5cc, 2cc, 1cc and 0.5cc are required. 10 pippettes of each denomiation to each laboratory may be supplied for this year only. A plastic pippettes stand costing around Rs.40/- may also be supplied to each District Health Laboraotyr. Approximate cost is Rs.12,800/-

Except Tumkur, Chitradurga and Hassan, others lack sufficient number of test tubes to carry out routine work. Test tubes of following capacities may be purchasesd

1. 20cc (with rim) - for Water Bacteriology-300
2. 15cc (without rim) 100
3. 10cc -do- 200
4. 5cc (Narrow & long tube) 100

Approximate cost is Rs.50,000/-

RACKS: Except South Canara other District Health laboratories lack sufficient number or racks. 10 aluminium racks my be supplied to each district health laboratory. Approximate cost is Rs.50.000/-

Durhams Tubes: Except Chitradurga other dont posses/ lack sufficient number of durhams tubes. 2 x 250 Durhams tubes of 1 cm and 2.5 cm size each may be supplied to each laboratory. Approximate cost is Rs.5,000/-

Centrifuge: About 15 centrifuges require repairs. These require replacement of coils in most cases. In such cases they may be repaired by Health Equipment Officer. Approximate cost is Rs-10,000/-.

All the laboratories have sufficient number of Haemoglobinometer. Hence no new instrument need be purchased.

Haemocytometer: About 20 RBC & WBC pipettes may be purchased or the same may be borrowed from Public Health Institute, Bangalore.

Petridish: All the 20 District Health Laboratories should be provided with 25 petridishes each, this year. Approximate cost is Rs.20,000/-

Loops: Each laboratory may be provided with 1/2 meter of nichrome wire and 2 handles each. Aproximate cost is Rs.1,000/-

None of the District Health Laboratories have chloroscopes. Each may be supplied with one. Approximate cost is Rs.40,000/-

ESR Tubes: There are 148 ESR tubes in the District Health Laboratories Mandya. These may be distributed to all other D.H.L.s at 5 pieces for each laboratory.

BUDGET ESTIMATE FOR REPAIR/PURCHASE OF MINIMUM ESSENTIAL ARTICLES TO 20 DISTRICT HEALTH LABS FOR THE YEAR 1993-94

01.	Repair of Autoclaves/Hot Air Oven Incubator (7 each)	..	Rs.15,000-00
02.	Rppair of Water bath	..	Rs. 5,000-00
03.	Repair of 25 Microscopes	..	Rs. 5,000-00
04	Purchase of 4 new colorimeter	..	Rs.60,000-00
05	Purchase of 40 x 20 cc pippettes	..	Rs.12,000-00
06	Purchase of 20 pippettes stands	..	Rs. 800-00
07	Purchase of 20cc x 6000 test tubes	..	Rs.30,000-00
08	Purchase of 15cc x 2000 test tubes	..	Rs. 8,000-00
09	Purchase of 10cc x 4000 test tubes	..	Rs.16,000-00
10	Purchase of 5 cc x 2000 test tubes	..	Rs. 6,000-00
11	Purchase of 200 racks	..	Rs. 3,000-00
12	Purchase of 10,000 Durham tubes	..	Rs. 5,000-00
13	Repair of Centrifuges	..	Rs.10,000-00
14	Purchase of 10 centrifuges	..	Rs.60,000-00
15	Purchase of 500 petridish	..	Rs.20,000-00
16	Purchase of Nichromes and loop handle	..	Rs. 1,000-00
17.	Purchase of 20 Chlorocaps	..	Rs.40,000-00
			Rs.2,96,800-00

The list does not include purchase and repair of Refrigerator and purchase of Gas cylinders.

YEARLY REQUIREMENT OF COMMON CHEMICALS AND REAGENTS TO DISTRICT HEALTH LABORATORIES.

It has been observed that all the distriict Health Laboratories have shortage of chemicals and reagents. The supplies are irregular and erratic and not of standard quality. This is mainly due to the ignorance on the par t of Medical officers/DH& FWO about the daily/monthly require ment of laboratory. Necessary materials are bought in times of crisis only. An epedemic of cholera or typhoid is required to persuade the people concerned to place the order for purchase of necessary media for ~~xu~~ culture of stool samples.

The list of minimum yearly requirement of the District Health Laboratories is presented here below. often the Medical officer is not aware of the addresses of the firms or dealers who deal with the laboratory chemicals. Further quantities required being small the firms also tend to neglect the orders. Hence it is suggested that the require- ment may be purchased in bulk by the public health Institute who will supply them to the concerned laboratories.

YEARLY REQUIREMENT OF LABORATORY CHEMICALS FOR THE DISTRICT HEALTH LABORATORIES

Sl No.	Name of the Item	Qty req for each DHL	Nt Qty for 20 DHL	Approximate amount
01	N/10 Hcl	1 ltr	20 ltrs	Rs. 800-00
02	O.Toludine	2 ltr	40 ltrs	Rs. 40000-00
03	Acetic acid	1/2ltr	10 ltrs	Rs. 100-00
04	Sulphosalicylic acid	1 ltr	20 ltrs	Rs. 3000-00
05	Nitric acid	1/2ltr	10 ltrs	Rs. 3000-00
06	Th.Iodine	1/2ltr	10 ltrs	Rs. 1500-00
07	Grams Iodine	1/2ltr	10 ltrs	Rs. 1500-00
08	Absolute alcohol	10 ltr	200 ltrs	Rs. 1000-00
09	Benedict solution	15 ltr	300 ltrs	Rs. 12000-00
10	Sulphur granules	100 gms	2 kgs	Rs. 500-00
11	RBC diluting fluid	1 ltr	20 ltrs	Rs. 3000-00
12	WBC diluting fluid	1 ltr	20 ltrs	Rs. 3000-00
13	EDTA	100 gms	2 kgs	Rs- 500-00
14	Sodium citrate	1 ltr	20 ltrs	Rs. 1600-00
15	10% NAOH	1 ltr	20 ltrs	Rs. 1200-00
16	Leshman stain	2 ltr	40 ltrs	Rs. 5600-00

1	2	3	4	5
17	Carbol Fuschin	2 ltr	40 ltrs	Rs. 8000-00
18	Nutrient Agar	1/2 kg	10 Kg	Rs. 10000-00
19	Mac Conkey media	1 Kg	20 kg	Rs. 56000-00
20	BSA Medium	1 Kg	20 kg	Rs. 15000-00
21	Kovac reagent	500 ml	10 ltrs	Rs. 1000 -00
22	Methyl red	500 ml	10 ltrs	Rs. 1200-00
23	High Titre sera for cholera	4+4 AMP	80+80 AMP	Rs. 500-00
24	VDRL analysis kit	1 box	20 boxes	Rs. 7000-00
25	Blood group antigen A+B+D	5 ml of each	100 ml of each	Rs. 6400-00
26	Cover slips	50 gm	1 kg	Rs. 600-00
27	Pippettee 10+5+1+0.5ml	5 of each	100 of each	Rs. 4000-00
28	Test tubes 20cc	200	10000	Rs. 59000-00
29	Test tubes 10cc	200	4000	Rs. 12000-00
30	Durham tubes	500	10000	Rs. 5000-00
31	Chloroscope	2	40	Rs. 8000-00

PLAN WHAT YOU DO

DO WHAT YOU PLAN

DOCUMENT WHAT YOU DID